Substance and force or why it matters what we think

Substance and Force
Or
Why It Matters What We Think[1]

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> [T]he concept of *forces* or *powers*, which the Germans call *Kraft* and the French *la force*, and for whose explanation I have set up a distinct science of *dynamics*, brings the strongest light to bear upon our understanding of the true concept of *substance.*
> (On the correction of metaphysics and the concept of substance, *Acta Eruditorum,* March 1694: GP IV 469; L 433)

Leibniz's mature metaphysics and physics marks a shift from the orthodox Cartesian understanding of substance solely in terms of the capacity for independent existence to an understanding of substance in terms of forces or powers.[2] As substances, Leibniz's monads are metaphysically primitive forces, active and passive to varying degrees, whose actions are the appetitions, desires or volitions that lie behind the succession of insensible, confused or distinct perceptions in the soul (*Monadology* §15: GP VI 609; L 644) and that are, so Leibniz believes, always directed towards whatever the soul perceives, rightly or wrongly, as good (*Discourse on Metaphysics*, §30: GP IV 454; AG 61. See also *A New Method for Learning and Teaching Jurisprudence*, revision note: A VI I 284; L 91n11). Monadic primitive forces are also the metaphysical foundations of the active and passive derivative forces of bodies, whose presence in bodies we infer from their motion and resistance respectively (*Specimen Dynamicum,* part 1: GM VI 237; L 436-7). Through this, the concept of force also leads to greater understanding of Leibniz's notion of corporeal substances. Relationships between substances, and in particular the ethical relationships that hold

[1] I am grateful to Lloyd Strickland and two anonymous referees for their insightful criticisms and comments on an earlier draft of this paper.

[2] Leibniz was not alone in recognizing the importance of force for understanding the notion of substance. As Valtteri Viljanen has argued, force or power is key to the understanding of Spinoza's concept of God or Nature and had been acknowledged by Plato and Aristotle (Viljanen 2011).

between rational substances, are also foregrounded by Leibniz's concept of substances as forces. The first two sections of this paper concern the modification of primitive forces as derivative forces in bodies and as perceptions and appetitions in souls. Section three attends to ethical implications embedded in Leibniz's account, focusing in particular on souls' representative natures and the correspondence that obtains between their respective perceptions. In the fourth and final section, however, it is argued that Leibniz's commitment to the doctrine of the conservation of force makes it impossible for any one substance to pursue its own advantage by increasing its active force without there being a correlative, but disadvantageous, decrease in the active force of substances elsewhere in the universe. While the tension cannot be entirely removed, it can be softened and regarded in a more positive light.

I

In 'On the correction of metaphysics and the concept of substance', Leibniz boldly declares that he had deliberately 'set up a distinct science of *dynamics'* in order to illuminate the 'true concept of substance'. The claim is initially puzzling. Leibniz's science of dynamics is a science of physical active and passive forces whose presence is made known to us through the motions and resistances of bodies, but it is not immediately obvious why these derivative forces should cast light on the concept of substance, for Leibniz is usually understood to have regarded bodies not as substances, but only as aggregates of substances. However, although some bodies are aggregates of substances, Leibniz's ontology also includes bodies that are themselves substances. Bodies are either corporeal substances or they are aggregates of corporeal substances (to Bierling, 12 August 1711: GP VII 501). Inanimate objects like rocks and stones, tables and chairs, are mere aggregates of corporeal substances, but are not themselves substances. However, when an aggregate body is attached to a dominant unifying soul or monad (a soul together with its limiting primary matter or primitive passive force), it is an organic body and the monad together with this organic body comprises a living animal-like corporeal substance (to De Volder, 20 June 1703: LV

264-5), such as a mammal, fish, insect, plant or any one of the infinitesimally small creatures that collectively comprise matter.[3]

Leibniz's conception of the corporeal substance as a soul combined with an aggregate organic body goes some way towards explaining why Leibniz believed his physical science of dynamics sheds light on our concept of substance, but that it sheds the 'strongest light' on the concept requires more explanation. To this end, we need to turn our attention to the *derivative* nature of physical force. Physical derivative forces are *derived from* the metaphysical primitive forces of substances insofar as they are modifications of the primitive forces.[4] Primitive active force (that is, the soul, substantial form or primitive entelechy) of the corporeal substance is the substance's 'primitive motive force':

> [A] *first entelechy* must be found in corporeal substance, a first subject of activity, namely a primitive motive force, which, added over and above extension (or that which is merely geometrical), and over and above bulk (or that which is merely material), always acts but yet is modified in various ways in the collision of bodies through conatus and impetus. (*On Nature Itself*: GP IV 511; AG 162)

Variously described as 'mass itself, in which there is nothing but *extension* and antitypy, i.e. impenetrability (to Thomasius, 29 April 1669: A VI ii 435; Ar 337), the 'principle of divisibility (to Arnauld, 9 October 1687: A II ii 251), a force 'of *resisting*' (*Specimen Dynamicum*, part 1: GM VI 237; AG 119-20) and as containing

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[3] 'I believe … that everything is filled with animated bodies. And in my opinion there are incomparably more souls than there are atoms according to Mr. Cordemoi, who makes their number finite, while I hold the number of souls, or at least of forms, to be infinite. And since matter is infinitely divided, no portion can be designated so small that it does not contain animated bodies, or at least bodies endowed with a primitive entelechy or, if you permit me to use the concept of life so generally, with a vital principle; in short, corporeal substances, all of which one can say in general that they are living.' (to Arnauld, 9 October 1687: A II ii 249; L 343). Opinion is divided as to whether animal-like corporeal substances appear also in Leibniz's later writings. See, for instance, Garber 2009, Arthur 2014. I myself am convinced that Leibniz did retain corporeal substances in the later years, even if he seldom described them as such (see *Monadology* §§66-70 and Phemister 2005).

[4] '[D]erivative force or accidental force, which we cannot deny to moving bodies, must be a modification of primitive force, just as shape is a modification of extension' (to Jacquelot, 22 March 1703: GP III 457/ WF 201). See also, to Des Bosses, 19 August 1715, postscript: LB 354-57).

the 'foundation of continuity' (to Des Bosses, 29 May 1716: LB 376-77), 'primary matter or bulk [*moles*]' (*On Nature Itself*: GP IV 511; AG 162) or primitive passive force is 'a force related to the whole mass of the organic body' (to De Volder, 20 June 1703: LV 264-65). As modified, it is '*the derivative force of being acted upon* … that shows itself in various ways in secondary matter' (*Specimen Dynamicum* part 1: GM VI 237; AG 120.[5]

The derivative forces of acting and being acted upon are present 'in every created substance' (*Specimen Dynamicum*, part 2: GM VI 247; AG 130). They are the physical forces deemed responsible for the motion and resistance of bodies, but arise ultimately from the primitive forces of the monads. Monads' primitive active and passive forces are modified as the derivative active and passive forces of their organic bodies, enabling them to move their own bodies and to resist the motion of other bodies that attempt to displace them. Did the soul not possess an organic body – that is to say, did the soul not have an aggregate of substances over which it is dominant – the soul's primitive force would not be modified as derivative force. The modification of the dominant monad/soul's primitive force as derivative force is effectively the accumulation of the derivative forces of the bodies belonging to each of the subordinate substances that comprise the dominant soul's organic body. In this way, the substances that comprise the soul's organic body, whose own primitive forces are in turn modified as the derivative forces of their own organic bodies, are the means by which the dominant soul's primitive force is modified as the derivative force of its body as a whole. For instance, in order that the primitive force of a human soul be modified as the derivative force of its human body, there must exist in every molecule in that body, another soul with primitive force, whose own primitive force is modified as the derivative force that lies behind the motion and resistance of the molecular organic body over which it itself is dominant. Each part of each molecule-body is again an aggregate of substances whose souls or primitive forces are modified as the derivative forces of their organic bodies. Since every soul is attached to an organic

[5] Secondary matter (*moles)* is 'an aggregate of corporeal substances' (to Bierling, 12 August 1711: GP VII 501)). As a continuous plurality of co-existing substances (i.e. 'the existence of parts at one and the same time'), secondary matter satisfies Leibniz's definition of an extended thing (to De Volder, 24 March/3 April 1699: LV 72-73).

body (to Masham, early May: GP III 340; WF 205)[6] – that is, to an aggregate of substances over which it is dominant – this process proceeds downwards to infinity. Consequently, the derivative force of the human body – and indeed the derivative force of any organic body – is a composite of the derivative forces in the organic bodies of the infinitely many substances that together complete the whole body.[7]

In this way, Leibniz's dynamics does shed light – and perhaps even the strongest light – on the nature of substance for it highlights the underpinning foundational role of the soul's primitive force and thereby also signals the presence of appetitive, perceiving souls and their organic bodies, that is, corporeal substances, throughout – and constitutive of – the natural world.

Although the substances that comprise the monad's organic body are external to the dominant monad insofar as they are themselves distinct substances, the composite derivative force of the organic body is internal to the whole corporeal substance. The derivative force of the organic body is ultimately a modification of the primitive force of the dominant monad that, together with its organic body, constitutes the corporeal substance itself. The degrees of derivative force that an organic body possesses at different times may appear to result from collisions or interactions with bodies external to it, but the true cause of both the action and resistance of a body lies in the corporeal substance's own force. In this consists,

> the inmost nature of the body [as corporeal substance], since it is the character of substance to act, and extension means only the continuation or diffusion of an already presupposed acting and resisting substance (*Specimen Dynamicum,* part 1: GM VI 235/ L 435)

Fundamentally, the motive power of the corporeal substance lies in the primitive active force or 'first entelechy' that 'corresponds to the '*soul* or *substantial form*' of the substance (*Specimen Dynamicum,* part 1: GM VI 236/ L 436) and the resistance of

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6 See also, to Masham, September 1704: GP III 362-63/ WF 219; *Considerations on Vital Principles and Plastic Natures*: GP VI 545-46/ L 590.

7 The reading I have presented here has been argued in more detail in Phemister 2005, chapters 1-3 and 8.

the corporeal substance lies in the primitive passive force that corresponds to its primary matter (*Specimen Dynamicum,* part 1: GM VI 236-237/ L 437). However, in the scientific – as opposed to metaphysical – explanation of particular phenomena, that is to say, in the explanation of particular apparent interactions among bodies, it is to the derivative forces only that we must appeal, and particularly to the derivative active forces responsible for the motion of bodies:

> Primitive force, which is nothing but the first entelechy, corresponds to the *soul* or *substantial form,* but for this very reason it relates only to general causes which cannot suffice to explain phenomena. Therefore I agree with those who deny that forms are to be used in investigating the specific and special causes of sensible things … A knowledge of forms is necessary, meanwhile, for philosophizing rightly, and no one can claim to have grasped the nature of body adequately unless he has paid some attention to such things … But setting aside these general and primary considerations, and having established the fact that every body acts by virtue of its form and suffers or resists by virtue of its matter, we must now proceed to the doctrine of *derivative forces* and *resistances* and discuss the question of how bodies prevail over or resist each other in various ways by their varied impulses. For to these derivative forces apply the laws of action, which are not only known through reason but also verified by sense itself through phenomena.
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> Here, therefore, we understand by derivative force, or the force by which bodies actually act and are acted upon by each other, only that force which is connected with motion (local motion, that is) and which in turn tends to produce more local motion. For we admit that all other material phenomena can be explained through local motion. (*Specimen Dynamicum,* part 1: GM VI 236-237/ L 436-437)

Since derivative forces are forces internal to each corporeal substance itself, explanations of physical phenomena in terms of their derivative forces have no need to appeal to theories of interaction between bodies that advocate the transference of force from one body to another. When two bodies collide,

> *both act equally in the collision*, so that half of the effect comes from the action of one, the other half from the action of the other. And since half of the effect or passion is also in one and half in the other, it suffices to derive the passion which is in one from the action which is in it, so that we need no influence of one upon the other; even though the action of one provides an occasion for the other to produce a change within itself (*Specimen Dynamicum,* part 2: GM VI 251/ L 448)

In collisions between bodies, the derivative active force of the collided body naturally increases (and its resisting derivative passive force correspondingly decreases) at precisely the same moment when the derivative active force of the colliding body decreases (and its derivative passive force corresponding increases), so that the increased active force and motion of the body is matched by a reciprocal decrease in the active force and motion of the other whenever the latter meets the first and appears to propel it forward. There is no need to postulate that forces are transferred during such collisions. Bodies change in accordance with what is happening in the external world, but without any actual exchange of force occurring between them. Each body simply moves by its own derivative active force and resists by its own derivative passive force, but nevertheless in harmony with the corresponding increases and decreases of the derivative active and passive forces in the other. With all increases in the active forces of bodies matched by equivalent decreases of the active forces in others, the overall balance of forces is maintained and the total amount of derivative active force in the universe is conserved. This position Leibniz had been advocating over many years against the Cartesians for whom only motion, not force, is conserved.[8] However, as we shall see in section four, this poses difficulties with respect to our ability to conduct ourselves in ways that are entirely ethically good.

II

[8] See, for instance, 'A Brief Demonstration of a Notable Error of Descartes and Others concerning a Natural Law', published in the *Acta Eruditorum* in March 1686 (GM VI 117-119/ L 296-302. For more detailed discussion of Leibniz's physics, see Arthur 2014, ch.6 and Garber 2009, ch.4.

Derivative forces are not the only kind of modifications that arise from substances' primitive forces. Primitive force is modified in two different directions simultaneously. On the one hand, primitive forces are modified as bodies' derivative forces; on the other, they are modified as souls' perceptions and appetitions (to Des Bosses, 19 August 1715, postscript: LB 354-57). The primitive force of the monad is the metaphysical ground of the motion and resistance of its organic body and the metaphysical ground of the perceptions and appetitions of its soul.

Appetitions are strivings that move the monad from one perception or perceptual state to the next, with the force or strength of the appetition determining the degree of distinctness of the resulting perception (*Monadology* §15: GP VI 609/ AG 215). The greater the active appetitive force, the more distinct the perception; the less the appetitive force, the more confused the resulting perception, the monad's active force being in this case counteracted by its primitive passive force. It is this that makes it possible for us to 'attribute *action* to the monad insofar as it has distinct perceptions, and *passion,* insofar as it has confused perceptions' (*Monadology* §49: GP VI 615; AG 219) and to regard substances as having 'metaphysical matter or passive power insofar as they express something confusedly; active, insofar as they express it distinctly' (*On the method of distinguishing real from imaginary phenomena*: GP VII 322/ L 365).

When the object of the soul's attention is perceived distinctly, distinguishing features, 'sufficient to distinguish a thing from all other similar bodies', are clearly discerned and available thereafter for use in explanations of the object's distinctive nature (*Meditations on Knowledge, Truth and Ideas*: GP IV 422; AG 24). In contrast, although confused perceptions are sufficiently clear that they enable the perceiver to identify its object as distinct from others around it (ibid.), no explanation of the object's distinctiveness is forthcoming, for the 'marks [*nota*] sufficient for differentiating a thing from others' (ibid.) are not themselves also clearly perceived. On these criteria, our sense perceptions of our own organic bodies – through which, as we shall see, we perceive bodies in the wider external world – are confused perceptions: sufficient to enable us to identify them as our own, but lacking clear perception of their myriad component parts. Our 'metaphysical matter' or primitive

passive force prevents our appetitions reaching their full potential and we perceive only as one extended mass what is in fact a composition of extended organic bodies belonging to the infinity of corporeal substances that, in aggregate, comprise our own extended organic body.[9]

In this way, the primitive passive force that is modified as the derivative passive force of resistance in our organic bodies is the same primitive passive force that is responsible for the limitation of our active force, resulting in our confused passive sense perceptions of those same bodies. The modification of the monad's primitive passive force as confused perception corresponds to its modification as the derivative passive force that the body displays through its resistance. Meanwhile, in contrast to the passivity of the soul's confused sense perceptions and the resistance of its organic body, the monad's primitive active force is modified both as strong appetitions that generate distinct perceptions in the soul and as the derivative active force and motion of its organic body, motions that, in the optimum case, bring to fruition what the soul has distinctly perceived as truly good and, having so perceived it, wills that it be.[10]

Towards the end of section I, we saw how the internal balance of active and passive derivative force in one body is synchronized with the internal balance of active and passive force in others, so that even though bodies appear to interact, there is no need to postulate any transference of force between them. Among souls or monads' appetitions and perceptions, a similar harmonious synchronization obtains, a harmony that operates without the need for the transference of force from one soul to another. Indeed, there cannot be any actual causal interaction or transfer of force among simple, indivisible and partless souls (*Monadology* §7: GP VI 607/ AG 213-214).

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9 As Leibniz clarifies in his Notes on Michael Angelo Fardella, bodies are aggregates of substances and 'although the aggregate of these substances constitutes body, they do not constitute it as parts, just as points are not parts of lines, since as part of always of the same sort as the whole. However, the organic bodies of substances included in any mass of matter are parts of that mass … And therefore there are substances everywhere in matter, just as points are everywhere in a line. And just as there is no portion of a line in which there are not an infinite number of points, there is no portion of matter which does not contain an infinite number of substances. But just as a point is not a part of a line, but a line in which there is a point is such a part, so also a soul is not a part of matter, but a body in which there is a soul is such a part of matter.' (FC 322; AG 105).

10 Leibniz connects the external action of the creature (the corporeal substance) with the activity and distinct perceptions in the dominant monad through the notion of perfection at *Monadology*, §§48-49.

Nevertheless, the overall balance of force in the universe is maintained. Increases in the active force and distinct perceptions in one monad are matched by corresponding increases in the passive force and confused or insensible perceptions of others. This balancing of forces is achieved, not through transfers of force, but by God's co-ordinating everything in advance, so as to ensure that the

> actions and passions among creatures are mutual. For God, comparing two simple substances, finds in each reasons that require him to adjust the other to it; and consequently, what is active in some respects is passive from another point of view: *active* insofar as what is known distinctly in one serves to explain what happens in another; and *passive* insofar as the reason for what happens in one is found in what is known distinctly in another. (*Monadology*, §52: GP VI 615/ AG 219)

Even though 'monads have no windows through which something can enter or leave' (*Monadology* §7: GP VI 607/ AG 213-214) and the 'influence of one monad over another can only be ideal' (*Monadology* §51: GP VI 615; AG 219), monads and the bodies over which they are dominant are not disconnected or unrelated beings. A harmonious pre-established order pertains among all created beings, a 'universal harmony, which results in every substance expressing exactly all the others through the relations it has to them' (*Monadology* §60: GP VI 617/ AG 220). In the *New System,* Leibniz explains that,

> since this nature that pertains to the soul is representative of the universe in a very exact manner (though more or less distinctly), the series of representations produced by the soul will correspond naturally to the series of changes in the universe itself, just as the body, in turn, has also been accommodated to the soul for the situations in which the soul is thought to act externally. (*New System*: GP IV 485/ AG 144)

Each monad or soul is essentially outward-looking, perceiving the world from its own distinctive perspective, its perceptions reflecting all that has happened, is happening, and will happen in the universe (*Discourse on Metaphysics* §8: A VI iv B 1541/ AG 41). In each case, the soul's representation of the external world is mediated through

the sense organs of the body to which it is attached (to Arnauld, 9 October 1687: A II ii 241-242/ LA 144-145). Effectively, each individual substance perceives bodies in the world outside itself only insofar as it perceives the effects that others have had on its own body, in accordance with the non-interactive model described in section 1, which involves no actual transfer of derivative force.

A soul's perception of its own body is a perception of the whole body that contains within it smaller perceptions of the infinitely many parts of the body. Even though perceptions are in themselves indivisible, they are complexes of multiple minute or *petites* perceptions. The complexity of the body is reflected in the soul through an isomorphic mapping of the elements or parts of the body to the elements of each perceptual state (Swoyer 1995). While the perceptual state itself may be (relatively) distinct, each of its elements, considered separately, is only a confused perception or even (as are the majority) an insensible, minute perception. We can illustrate this using an example drawn from Leibniz himself.

> To give a clearer idea of these minute perceptions which we are unable to pick out from the crowd, I like to use the example of the roaring noise of the sea which impresses itself on us when we are standing on the shore. To hear this noise as we do, we must hear the parts which make up this whole, that is the noise of each wave, although each of these little noises makes itself known only when combined confusedly with all the others, and would not be noticed if the wave which made it were by itself. We must be affected slightly by the motion of this wave, and have some perception of each of these noises, however faint they may be; otherwise there would be no perception of a hundred thousand waves, since a hundred thousand nothings cannot make something. (*New Essays*, preface: A VI vi 53/ RB 53)[11]

When we hear the sound of the sea, our actual perception is a perception of the combined effect that each wave has had on our own bodies. The waves' motions cause (non-interactively) corresponding vibrations in our eardrums that reverberate from there to the brain and other parts of our bodies. To each motion of each wave

[11] See also, *Discourse on Metaphysics*, §33: A VI iv B 1582-1583/ AG 65. To Arnauld, 30 April 1687: A II ii 175-176; LA 113.

there is a corresponding motion in the parts of own bodies and a corresponding insensible perception in the soul of the parts of its body. Manifesting cumulatively as a perception of the sound of the sea, the soul hears the sound of the sea by mirroring in its perceptions each changing motion in its body and its parts. Just as the sea itself is an accumulation of all of the individual waves, so too our aural experience of the sound of the sea is the result of the accumulated myriad *petites* or insensible perceptions of the individual effects of each wave on our bodies.

Of course, our bodies are affected not only by the sea's waves. Everything that happens in the entire universe, no matter how distant, has some effect upon our own bodies. The spatial plenum and impossibility of a vacuum ensures that the effects of any one body's motions and resistances cause adjustments to be made throughout the entire material continuum, affecting all others, including our own. These effects extend to every atom, molecule, organ, nerve ending, pore, and so forth in our bodies. Minutely perceived these parts may be, but in combination they provide us with perceptual experiences that are, first and foremost, representations of the current state of our own bodies, but which are also representations of the entire external world, as perceived through its effects (*New System*: GP IV 484 / AG 143).

Souls or monads not only perceive or express external physical bodies through this correspondence of the motions of their bodies and their internal perceptions. The correspondence is also a means of ensuring that they perceive or express other souls or monads. As corporeal substances (dominant monads and their organic bodies), we perceive other corporeal substances by perceiving the effects that their bodies have had on our own bodies. However, since these others also have perceptions that mirror the states of their own bodies, our perceptions of their bodies must correspond to their perceptions of their own bodies. Consequently, not only do our perceptions map isomorphically onto our own and to others' bodies, they map onto other souls' perceptions as well. Conversely, others experience through their bodies the effects that our own bodies have on their bodies. Hence, while our perceptions map onto theirs, others' perceptions in turn also map onto ours. There is therefore non-interactive harmony not only between bodies and between souls and their own bodies, but also – through the connections among all bodies – harmony across all perceiving souls or monads.

III

The various harmonies – between souls, between bodies, and between souls and their bodies – are themselves in harmony with each other. The interconnectedness that arises from this harmonization of the harmonies is meticulous and comprehensive: every corporeal substance is so deeply integrated into the system of the world that everything, no matter how slight, that happens in any one substance is registered in each and every one of the others.

However, this deeply ingrained interconnectedness harbours an uncomfortable and disconcerting corollary: that each perception in our minds has an influence on the perceptions had by all others. Even though, as Leibniz stated at *Monadology* §51, this influence 'can only be ideal', all monads are related to each other (*Monadology*, §60). By its very nature, each soul or monad represents what is happening in all substances throughout the world. The interconnectedness of all things, coupled with the fact that each soul perceives the external world through its perceptions of its own body and the changes made upon its body by external things, entails that all our perceptions affect, albeit in a non-causally interactive manner and to greater or lesser degree, the content of the perceptions in all other souls or entelechies. Not only do the thoughts of which we are self-consciously aware have physical and ethical repercussions for all others in the world, but so too do our non-selfconscious insensible and confused perceptions.

At first, this consequence is likely to evoke incredulity, for we ordinarily – and rightly – assume that the innermost workings of our minds are inaccessible to others: without being, so to speak, 'inside my head', no other living being can experience the world as I do. It is not possible for us to experience the world through the body of another, to see things from their determinate perspective and location. However, the inaccessibility of our minds encourages us to believe that our inner thoughts have no outer effects. In law, thinking about committing a crime or even contemplating in detail how it might be enacted, are not punishable offences. No doubt this is because they are not provable offences, but the legal system conforms with the commonly held notion that no one is harmed by being the object of another's malicious thoughts,

provided the other tells no one, but keeps such thoughts private to him– or herself. Merely thinking ill of someone or something, while taking no overtly visible action, is believed to cause no harm to the other.

From a Leibnizian perspective, however, this cannot be the case. Leibniz's philosophical position does not permit the inference that our innermost 'private' musings have no power to effect changes in the wider world. Leibniz himself admits there is no change in any substance that does not affect every other substance:

> [W]hen a change takes place by which several substances are affected (in fact every change affects all of them), I believe one may say that the substance which immediately passes to a greater degree of perfection or to a more perfect expression exercises its power and *acts*, and the substance which passes to a lesser degree shows its weakness and *is acted upon* [*pâtit*]. (*Discourse on Metaphysics* §15: GP IV 441/ AG 48).

Even though each mind is closed and private insofar as no other being experiences the world from its unique perspective, its embodiment ensures its thoroughgoing connectivity to the rest of the world. While 'creatures free or freed from matter' would be 'divorced from the universal bond, like deserters from the natural order' (*Considerations on Vital Principles and Plastic Natures*: GP VI 546; L 950), no Leibnizian mind or soul is ever separated from the natural order, as the synopsis of his position immediately preceding this statement makes clear. There, as well as upholding the principles of mechanism, the conservation of force, and the pre-established harmony of mind and body, he maintains

> … that there is no part of matter which is not actually divided and does not contain organic bodies, that there are also souls everywhere as there are bodies everywhere, that the souls and even the animals subsist always, that organic bodies are never without souls, and that souls are never separated from organic bodies, though it may be true, nevertheless, that there is no part of matter of which one can say that it is always affected by the same soul. Thus I do not at all recognize entirely separated souls in the natural order or created spirits

> entirely detached from any body. (*Considerations on Vital Principles and Plastic Natures*: GP VI 545; L 590)

In this paper, I have been attempting to show how this thoroughgoing interconnectedness and integration of souls within the natural order is effected through the modifications of the monad's primitive forces. The expressive correlation of the soul and its body and the dual modification of the soul's primitive forces as appetitions and perceptions in our minds or souls and as derivative active and passive forces that underpin the motion and resistances of our bodies, entails that every single perception has a correlative action/reaction in the body, which then affects (non-interactively and without any actual transference of force) all other bodies in the wider world. Through the connections between our own and others' bodies and the perception of each through their own bodies, the mental state of any one creature is communicated to all other living, perceiving beings. All our perceptions and appetitions, including those over which we have no conscious awareness or control and irrespective whether we ostensibly or visibly act upon them, are thus reflected or re-presented in others. Each self-conscious thought, each conscious sensation, desire, fear, longing, like and dislike, and even each insensible or sub-conscious perception or vaguely felt disquiet or inclination is correlated with a physical state of the body and through it communicated to each of the infinitely many embodied, perceiving beings that comprise the world.

Individual thoughts and perceptions differ with respect to their respective degrees of force or power and influence. The more distinct our perceptions, the greater the appetitive force that lies behind them and the greater the corresponding derivative force and motion in the body. However, confused and insensible perceptions also have some active appetitive force behind them and a corresponding degree of derivative active power in their bodies. Our imaginings and inner thoughts in our waking states also affect our own bodies and through them enter into the wider arena. Even the insensible perceptions we have when we are asleep, although correlated with less activity in our bodies as compared to waking states, still produce some motion within our own bodies that (in the manner explained earlier) has an effect upon external bodies. Such insensible or confused perceptions may, through accumulation, constitute the components of conscious and self-conscious perceptions, in much the

same way as the amassing of the insensible sounds of the individual waves results in the conscious perception of the sound of the sea. Something similar holds in the case of our conscious desires and self-conscious volitions. They too are composites of minute inclinations, as Leibniz explains in this passage from the *New Essays*:

> Various perceptions and inclinations combine to produce a perfect volition: it is the result of the conflict among them. There are some, imperceptible in themselves, which add up to a disquiet which impels us without our seeing why. There are some which join forces to carry us towards or away from some object, in which case there is desire or fear, also accompanied by a disquiet but not always one amounting to pleasure or displeasure. Finally, there are some impulses which are accompanied by actual pleasure or suffering. (*New Essays*: A VI vi 192; RB 192) [12]

Aware of the importance of these minute perceptions and inclinations as the formative components of our self-conscious perceptions and appetitions, Leibniz is keenly aware of the need to 'gain control of both our *passions* and of our *insensible inclinations*, or disquiets, by acquiring the custom of acting in conformity with reason which makes virtue a pleasure and second nature to us (*New Essays*: A VI vi 188; RB 188). A couple of examples will help to illustrate more concretely not only the physical but also the ethical importance attaching to all the perceptions and appetitions in our minds, no matter how minute. For instance, the building of little resentments against a perceived antagonist and the constant going-over of alleged past wrongs inflicted by another fuels ill-feeling that will inevitably be reflected in one's body language when one encounters the supposed wrongdoer and communicated through the body to others. If, on the other hand, one seeks constantly to find good in the other and is willing to overlook, forgive or re-interpret presumed wrongs, these perceptions of the other as good, however minutely perceived, will over time amass to generate more conscious feelings of good-will towards the other and this, in turn, will affect one's own body language when one encounters them. If one succeeds in

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12 See also: '[T]he minute insensible perceptions of some perfection or imperfection, which I have spoken of several times and which are as it were components of pleasure and of pain, constitute inclinations and propensities but not outright passions' (*New Essays*: A Vi vi 194/ RB 194).

generating the more perfect feelings of love rather than of hatred and resentment, not only will this be reflected in one's own body, but via the continuum, it will also be reflected in the bodies and minds or souls of all others. By these means, the generating of feelings of love and compassion towards others will have a positive effect on the world as a whole, even though the effect might not be immediately apparent.[13]

To love, notes Leibniz in the *New Essays,* 'is to be disposed to take pleasure in the perfection, well-being or happiness of the object of one's love' and to do so disinterestedly, 'not thinking about or asking for any pleasure of one's own except what one can get from the happiness or pleasure of the loved one' (A VI vi 63/ RB 163). In his 1693 *Codex Juris Gentium Diplomaticus*, to which he here refers the reader, Leibniz had further explained that feelings of pleasure, happiness and love arise directly from the contemplation of beauty:

> the contemplation of beautiful things is itself pleasant, and a painting of Raphael affects him who understands it, even if it offers no material gains, so that he keeps it in his sight and takes delight in it, in a kind of image of love. But when the beautiful object is at the same time itself capable of happiness, this affection passes over into true love (*Codex Juris Gentium Diplomaticus*, preface: GP III 387/ L 422)

Distinct perceptions and the higher levels of appetitive force that give rise to them are essential to the lover's contemplation of beauty, conceived as a rational aesthetic grounded in notions of order, harmony and 'variety in unity' and essential also to the happiness and wellbeing of the beloved, whose perfection is to be understood in terms of their active force: 'perfection shows itself in great freedom and power of action, since all being consists in a kind of power; and the greater the power, the higher and freer the being' (*On Wisdom*: GP VII 87; L 426).[14] To serve another well, to treat

[13] Conversely, the harbouring of feelings of hatred and contempt towards oneself or others will have the opposite effect and serve only to increase suffering, disorder and imperfection.
[14] See also Phemister 2016: 117-118. In this paper, I confine my remarks to the perfection of individuals and to the perception by individuals of their own and other individuals' perfections. I do not here address any issues relating to the perfection of the world as a whole.

them in a manner that is ethically good, is to enhance their perfection by advancing their power and capacity to act, for 'every action of a substance which has perfection involves some *pleasure*, and every passion some *pain' (Discourse on Metaphysics* §15: GP IV 441/ AG 48). Our own perfection too is measured in terms of our degree of primitive active force and the distinct perceptions to which it gives rise: 'the soul … has perfection to the extent that it has distinct perceptions' (*Principles of Nature and Grace*, §13: GP VI 604; AG 211). In light of the discussion in sections one and two, we should not be surprised to discover that Leibniz accords a corresponding degree of perfection to our bodies: 'every created intelligence has an organic body, whose level of perfection corresponds to that of the intelligence or mind which occupies the body by virtue of the pre-established harmony' (*New Essays*: A VI vi 307; RB 307).

Ethically, increasing the distinctness of one's own perceptions opens the way to the contemplation of others' beauty, generating in turn feelings of love towards them. However, the influence of one's own perceptions reaches further than their immediate objects. Increasing our own perfection, Leibniz holds, leads to an increase in the perfections of others too, for whenever, as they must be, our perfections are reflected in others, so too are these perfections themselves replicated in these other perceivers. Making the case from the other side (that is, considering our perception of others' perfections), Leibniz writes:

> *Pleasure* is the feeling of a perfection or an excellence, whether in ourselves or in something else. For the perfection of other beings also is agreeable, such as understanding, courage, and especially beauty in another human being, or in an animal or in a lifeless creation, a painting or a work of craftsmanship, as well. For the image of such perfection in others, impressed upon us, causes some of this perfection to be implanted and aroused within ourselves. Thus, there is no doubt that he who consorts much with excellent people or things becomes himself more excellent. (*On Wisdom*: GP VI 86; L 425)

It seems fair to assume that, conversely, some of the imperfection in other beings, disagreeable though it may be, is similarly implanted in ourselves when we perceive it, and some of our own imperfection implanted in others when they perceive it in us.

Thus, when we perceive another's perfection or imperfection, some of this perfection or imperfection (and the associated action or passion, pleasure or pain) is 'implanted and aroused within ourselves'. So too, when others perceive a perfection or imperfection in us, some of the perfection or imperfection (and associated action or passion, pleasure or pain) is 'implanted and aroused' in them.

It is therefore in our own and others' best interest to seek to advance our own activity and perfection (for others' perfection will in turn be increased by the image in them of the perfection in us) and it is also in our own and others' best interest that we seek to advance the activity and perfection of others (for our own perfection will in turn be increased by the image produced in us of the perfection in them). Similarly, it is in our and others' best interests that we seek to decrease passivity, pain and suffering, wherever it is found. It behoves each and every one of us to do what we can to increase the active power (and to decrease the passive power) both of ourselves and of others, so that each may distinctly perceive beauty and perfection in all things, gain pleasure from the contemplation of this beauty and develop corresponding feelings of love towards the things thus regarded. In short, it is in their and our best interests to promote the power, perfection, activity and pleasurable wellbeing of others.

IV

Questions concerning the viability of this optimistic vision emerge when it is considered in the light of Leibniz's dynamics and in particular in light of his vigorous endorsement of the doctrine of the conservation of force. Leibniz's optimism suggests that the more we increase our own power and perfection, the more the power and perfection of other substances is increased, and vice versa, the more others increase their own power and perfection, the more too, by reflection, is our own power and perfection increased. However, this stands in direct opposition to Leibniz's view that the overall amount of active force in the universe is conserved. If force is to be conserved, an increase in the active force in one substance has to be matched by corresponding *decreases* in the forces of one or more other substances. Any improvement in the distinctness of one substance's perceptions and corresponding increase in the force from which these perceptions derive will disadvantage rather

than advantage at least some other substances. If, parallel with the conservation of physical force, the overall amount of perfection in the world is also conserved, then, as Leibniz himself recognized, 'some substances cannot increase continually in perfection without others continually decreasing in perfection (*Whether the World Increases in Perfection*: Grua I 95/ SLT 196). Leibniz's insistence that force is conserved throughout the universe makes it impossible for any increase in the power and perfection of one substance to be of benefit to all other substances. At best, it will increase the power and perfection of some, but these increases cannot be regarded as benefiting all: some will suffer decline in power so that others may thrive.

One might think that by confining the scope of ethical conduct solely to relations among rational beings, who are properly capable of happiness and of being loved, would address this problem. So long as those whose perfection needs to be decreased in order to maintain the balance of forces across the universe are not ethically considerable, the fact of their being disadvantaged might conveniently be ignored. Our efforts to increase our own perfection can be justified on the grounds that they bring good to ourselves and to other rational beings, in the manner explained above, while the consequences of our actions upon nonrational others can be regarded as simply irrelevant, since nonrational creatures do not fall within the range of moral considerability.[15] Under this restriction, it could be considered ethically acceptable that they suffer loss of their active force and their passivity increases in order to ensure that the overall amount of force in the universe is conserved in the face of our own and other rational beings' increased active force and perfection.

However, this proposed solution is not altogether satisfactory. Each substance mirrors or perceives every other substance in the universe. In so doing, each perceives the perfections and the imperfections of others and, as we have seen, some of their perfection and, presumably also some of their imperfection, is thereby 'implanted and aroused' in the perceiver. In perceiving every other substance, each substance receives a portion of the others' perfections and imperfections. It follows, therefore, that any increase or decrease in the perfection of one substance, irrespective of whether the substance is rational or not, non-causally influences our own degree of

[15] Leibniz adopts a dismissive attitude with respect of the pains suffered by nonhuman nonrational animals, regarding it as 'very slight' (*Theodicy* §250: GP VI 266/ H 281).

perfection. If we are indeed compelled to represent in our perceptions not only the perfections and active force of others, but also the imperfections and passive force required in substances elsewhere in the universe in order that the overall balance of force across the whole universe is maintained, then no matter how much we succeed in increasing our own perfection or that of some others, full perfectibility will remain forever out of our reach. Our perceptions will always include perceptions of imperfection in others, some of which, in being perceived, is accordingly implanted in us.

The source of this tension lies in the supposition made earlier that what holds of perceived perfections is true also in reverse for the imperfections perceived in others, that is, that some of the imperfection of others is 'implanted and aroused' in those that perceive it. Leibniz had claimed that 'the image of … perfection in others, impressed upon us, causes some of this perfection to be implanted and aroused within ourselves' and had followed up with the remark that 'Thus, there is no doubt that he who consorts much with excellent people or things becomes himself more excellent. (*On Wisdom*: GP VI 86; L 425). It seemed reasonable to suppose that the opposite holds too: namely that those who keep company with 'bad' or 'less than excellent' people will themselves become 'less excellent', that is, less perfect. However, it could be that Leibniz intended his remarks to apply only to the perfections we perceive in others. Perhaps the perception of imperfection in others does not, or at least does not necessarily, lead to some of that imperfection being 'implanted and aroused' in the perceiver.

The proposal has merit, not least in that it allows us to acknowledge the active force that gives rise to a substance's distinct perceptions. It is feasible that a being might have distinct perceptions of another's imperfection, that is distinctly perceive the other's passivity,[16] without losing any of its own activity and perfection in the process. After all, in order to perceive a perfection *as* a perfection, the perceiver needs to perceive that perfection distinctly. The distinct recognition of a perfection *as* a perfection is a recognition also of its goodness or excellence and something which one will desire to acquire simply because one distinctly perceives that it is good. In

[16] I am grateful to the anonymous referee who raised this issue.

this way, it is understandable that in mixing with 'excellent people or things' and becoming aware of their excellence, one will automatically desire to become more like them, and the perfection in them will more easily take root or be 'implanted and aroused' in oneself. In contrast, one who distinctly perceives an imperfection in another, will also distinctly perceive that imperfection *as* an imperfection, and will be aware of its lack of excellence or goodness. Accordingly, it would be reasonable for them to desire *not* to acquire the imperfect quality they have perceived in the other, making it more difficult for the imperfection to take root or be implanted in the perceiver.

The proposal has the additional merit of being able to take seriously Leibniz's claim that only *some* of the perceived perfection of others is 'implanted and aroused' in the perceive, opening up the possibility that the amount of perfection implanted in the perceiver relates directly to how distinctly the perceiver perceives that perfection *as* a perfection. It also has the merit of allowing us to conceive that, at least in some cases, perceived imperfections in others will actually lead to increased imperfection in the perceiver. For instance, we might suppose that those whose perceptions of others' imperfections are confused will fail to recognize the perceived imperfections *as* imperfections and, lacking the active force that would have provided them with distinct perceptions, will be less able to resist the perceived imperfection also being implanted and aroused in themselves.

The remarks above are speculative. They go beyond what Leibniz's texts themselves will support, but nevertheless proceed along recognizably Leibnizian lines. The question that remains is whether these proposals suffice to resolve the tension between Leibniz's ethics and his physics. Certainly, they help insofar as they remove the injustice that increasing one's own activity and perfection is inevitably accompanied by some increase of one's own passivity and imperfection. However, force must still be conserved: increases in the primitive active force, distinct perceptions, and accompanying perfection in one substance need to be compensated by corresponding decreases in one or more substances elsewhere. The balance might be restored through increases in the passive force of nonrational creatures incapable of true happiness. Provided we are prepared to accept that these creatures are not morally considerable (which of course, for other reasons, we might not), it would be

possible to regard the trade-off between increased human perfection and decreased non-human perfection as morally acceptable.

Still, although our speculative proposals allow distinct perception of impassivity or imperfection to be free from any correlative increase of imperfection in the perceiver, confused perception of another's imperfection did not fare so well. In this case, it remains quite possible that in confusedly perceiving another's imperfection, one will oneself acquire some of that imperfection. Given that our sense perceptions of bodies are confused perceptions, and given that the substances or 'forms which are sunk in matter' have 'incomparably less perfection than do rational souls' (*New System*: GP IV 479; WF 13), we might expect at least some of their imperfection to be 'implanted and aroused' in us when we sense perceive material bodies.

Regrettable? Perhaps. Or it may be nothing more than a humbling reminder of our own finitude and of our inability to perceive others except through the prism of our own bodies. There needs always be some passive force as well as some active force in finite beings and some confused perceptions in distinct perceptions.[17] Absolute or completed perfection does indeed remain forever beyond the reach of finite individual beings. As the constituent primitive active and passive forces of a world in which the total amount of force is conserved, each finite substance is subject to the fluctuations of force required so that the overall balance of force is maintained as the forces of other individual beings in the world increase or decrease.[18] Seen in this light, Leibniz's universe is like a dance of substantial forces, constantly responding to and repositioning themselves in relation to each other, some rising while others fall, only to rise again within the harmonious procession of their growth, decay and re-growth.[19]

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17 The activity that leads to distinct perception is not separable from the passivity that results in confused perception: 'confused thoughts… invariably accompany the most distinct [thoughts] that we can have' (Reply to the Comments in the second edition of M. Bayle's *Critical Dictionary*: GP IV 563; WF 117).

18 By way of compensation, we may note that though increases in the active force and perfection of some substances must be balanced by decreases in the active force and perfection of others, these decreases must presumably be balanced in turn by increases in the active force and perfection of other substances within the system.

19 To Arnauld, 30 April 1687: A II ii 189; LA 124-25. Leibniz, however, also suggests that minds may be released on death from this eternal dance (ibid.)

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